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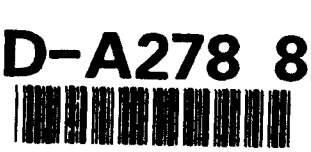

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The purpose of this research project is to establish an implementation plan for a recycling program at William Beaumont Army Medical Center, implement and evaluate a pilot program, and provide a restatement of the hospital-wide recycling program plan based on the pilot study. The program will be composed of three essential components: a recycling team, data collection, and program design. Success evaluation criteria for the program will include: 1) demonstrated revenue generation/cost savings; 2) effective staff education; 3) specific data collection; 4) demonstrated compliance with hospital safety standards; and 5) surveys of hospital personnel. In addition to compliance with federal mandate, military health care facilities which recycle can secure environmental, financial, and employee morale/community relations benefits. The William Beaumont hospital-wide recycling program will include: increased command emphasis, improved education/communication, collection and expansion, and utilization of recycled paper.

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A Graduate Management Project

Submitted to the Faculty of

Baylor University

in Partial Fulfillment of the

Requirements for the Degree

of

Master of Health Administration

CPT Laurie E. Sweet, SP

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ABSTRACT

The purpose of this research project is to establish an implementation plan for a recycling program at William Beaumont Army Medical Center, implement and evaluate a pilot program, and provide a restatement of the hospital-wide recycling program plan based on the pilot study. The program will be composed of three essential components: a recycling team, data collection, and program design. Success evaluation criteria for the program will include: 1) demonstrated revenue generation and/or cost savings; 2) demonstrated effective staff education; and 3) specific data collection; 4) demonstrated compliance with hospital safety standards throughout the recycling process; and 5) surveys of hospital personnel.

Recycling is the reutilization of materials through processing and reusing for either the same or similar purposes. Executive Order 12780, signed on October 31, 1991, requires Department of Defense (DoD) installations to have cost-effective resource recovery and recycling programs. Currently, William Beaumont Army Medical Center (WBAMC) has no formal hospital recycling program. In addition to compliance with federal mandate, military health care facilities which recycle can secure environmental, financial, and employee morale/community relations benefits. Benefits reported by hospitals with recycling programs include lower waste disposal costs, improved employee morale and community relations, reduced work area clutter, and reduced supply and energy costs.

Establishing a hospital recycling program involves three steps: (1) forming a team that assists with the plans, implementation, and on-going supervision of the program; (2) collecting data on the facility's waste production and the local market demand for recyclables; and (3) designing a recycling program that meets the needs of the facility and is compatible with the local market. Education, staff awareness, and administrative support are essential to program success.

The WBAMC hospital-wide recycling program will include: increased command emphasis, improved education/communication, collection and expansion, and utilization of recycled paper.

INTRODUCTION

Recycling is the reutilization of materials through processing and reusing for either the same or similar purposes (Hemmes, 1991a). Why should WBAMC have a recycling program? Most importantly, the law requires it. Executive Order 12780 signed on October 31, 1991, requires DoD installations to have cost-effective resource recovery and recycling programs, plus establish preference programs for purchasing items that contain recycled materials (Stehle, 1992). Fort Bliss already has a recycling program, however, WBAMC does not.

Department of Defense (DoD) facilities have environmental, monetary, and public relation incentives to have comprehensive recycling programs. Major General John F. Sobke, the Assistant Chief of Engineers, Army Corps of Engineers, states, "Defending the environment is a natural extension of DoD's constitutional mission to act `for the common defense,' both within our own country and as responsible citizens of the world" (Sobke, 1992, p. 13).

Americans produce 10 billion metric tons of non-agricultural solid waste every year. In order to manage solid waste, a combination of waste reduction, recycling, composting, use of landfills, and incineration is required. Four-fifths of our solid

waste is dumped into landfills. In 1978, there were 20,000 landfills in the United States. By 1988, 14,000 had closed; an estimated 75% of the remaining landfills are expected to close by the year 2005. In addition, many landfills cause serious ground and surface water pollution problems (The Global Ecology Handbook, 1990).

The ever increasing shortage of landfill space has led to increased incineration. Incineration has been used successfully to reduce the volume of solid waste, in some cases, as much as 90%. Even with strict Environmental Protection Agency (EPA) standards for waste incinerators, there is still concern about air pollution from emissions and water pollution from ash dumped into landfills. Technology is available to build incinerators that are environmentally safe and can harness energy to generate electricity and refuse-derived fuels, but the cost is high (The Global Ecology Handbook, 1990).

Department of Defense has the responsibility to act in a manner that will protect the environment. As landfills close and the availability of space for new landfills diminishes, hospitals must use recycling as one effective tool to preserve the environment (Milford Hospital, 1991). It decreases the amount of solid waste that must be disposed of through incineration or

landfills. It reduces energy, water, and raw material requirements as well as air and water pollution (The Global Ecology Handbook, 1990). Waste disposal fees are expected to increase at a rate of 10% per year during the 1990s (Hagland, 1993). Recycling reduces waste disposal fees and generates revenue for the hospital (Hemmes, 1991a). Therefore, given the legal and ethical considerations, decreasing budgets, potential revenue generation, and waste disposal costs, recycling is essential for military hospitals.

Recycling will generate revenue for the installation. In 1982, Public Law 97-214 authorized DoD to return recycling proceeds to installations that collect, separate, and turn in recyclable materials. By establishing recycle/reuse/reduction programs, DoD facilities recouped $35 million in fiscal year 1991 for environmental restoration projects and morale, welfare, and recreation activities (Stehle, 1992). Finally, recycling increases environmental awareness among staff and the community. In fact, hospital recycling programs have been shown to improve employee morale and community relations (Hemmes, 1991a).

Conditions which prompted the study

Two years ago, the executive officer at WBAMC attempted to start a recycling program. Unfortunately, with the organizational

turmoil and shift in priorities that resulted from Desert Shield/Storm, recycling was put on hold. Recently, the new executive officer at WBAMC took an interest in developing a hospital-wide program. A recycling committee had already been formed and one planning meeting conducted prior to my arrival at WBAMC.

Background Information

William Beaumont is located near Fort Bliss in El Paso, Texas. Fort Bliss began in 1847 as a campsite for soldiers in pursuit of Apache Indians. Since that time, it has evolved into the center for all air defense activity throughout the U.S. Army and the Free World (Fort Bliss, Sun Country, 1991).

William Beaumont Army Medical Center's history began in the late 1800s when Army physicians were first assigned to treat soldiers stationed at the Rio Grande. In fact, the majority of ailments treated by these physicians were caused by the unpurified river water. In 1920, William Beaumont General Hospital was opened. The hospital was named for Dr. William Beaumont, an Army physician during the War of 1812. Dr. Beaumont became well known for his extensive research of human digestion. His most significant research involved treatment of a fur trapper with a gunshot wound to his abdomen. The wound never healed, however,

the patient lived a near normal life for many years. During that time, Dr. Beaumont was able to observe, through the wound site, body functions and stomach processes. His work was highly regarded and among the first scientific observations of digestive processes (Fort Bliss, Sun Country, 1991).

Beaumont General Hospital focused primarily on treating local patients until World War II, when incoming casualties boosted the census to over 6,000. Since World War II, Beaumont has expanded its facility and services. In 1972, the present 12-story medical center building was opened. The facility encompasses over 500,000 square feet and houses many departments and clinics which provide a full range of treatment and training opportunities. In 1973, the hospital became William Beaumont Army Medical Center (WBAMC), under Health Services Command (HSC). In 1984, the Omar M. Bradley Building was added to the west side of the main hospital and provides an additional 120,000 square feet of space (Fort Bliss, Sun Country, 1991).

Today, William Beaumont Army Medical Center is a 396 bed tertiary care facility; it is one of eight Army medical centers. Its population served includes 85,000 Department of Defense beneficiaries and 65,000 other federal beneficiaries (Veteran's Affairs, Indian Health Service, Public Health Service, and Federal

prisoners) in the tri-state areas of Arizona, New Mexico, and West Texas.

Statement of the Management Problem

William Beaumont is a major United States Army Medical Center, however, it does not have a formal hospital-wide recycling program. For reasons of federal mandate, ethics, revenue generation and waste disposal cost avoidance, plus improved community relations, William Beaumont Army Medical Center (WBAMC) should have a recycling program.

Each hospital must create its own individualized program (Barlow, 1991). No two recycling programs are alike; conditions vary from place to place. Therefore, although much information can be drawn from other programs, the WBAMC recycling program must be individualized and designed specifically for this hospital.

Review of the Literature

Benefits reported by civilian hospitals that have implemented recycling programs include decreased waste disposal costs, improved employee morale and community relations, increased staff empowerment and enthusiasm, reduced work area clutter, and reduced supply and energy costs (Hagland, 1993; Health Care Advisory Board, 1992; Taravella, 1990; Teschke, 1991). One community hospital in Colorado reduced non-medical solid waste

disposal by 50% over a two year period (Hagland, 1993). Once the fixed costs of a recycling program are covered, recycling is less expensive than landfill or incineration disposal (Hemmes, 1991a).

Starting a recycling program involves three major steps. (1) Assembling a recycling team made up of health facility staff; a task force of representatives who formulate an environmentally sound action plan. One individual should be responsible for tracking the program. Each area should have a designated recycling manager, preferably a volunteer, who monitors recycling activities in his or her area, and serves as a point of contact for recycling information. (2) Data collection. A health facility's recycling program must be tailored to the individual community based on local recycling requirements and markets for recyclables, volume of waste produced, and amount of waste that can be recycled. (3) Program design. The design should designate areas with adequate space to accommodate recycling containers, develop a collection process, and identify responsibility. Fire safety codes and sanitation regulations must be met (Health Care Advisory Board, 1992; Hemmes, 1991a).

Surveys of various hospitals throughout the United States indicate that the recycling process may be improved through the utilization of pilot programs (Health Care Advisory Board, 1992).

Starting recycling programs too quickly in too many areas of the hospital may lead to discouragement and loss of staff enthusiasm. Pilot studies allow for small successes and a learning curve on which to build a more comprehensive program (Hagland, 1993; Health Care Advisory Board, 1992).

While many hospitals recycle only paper, aluminum, and other non-medical waste, one hospital set up a program to recycle clean medical waste from surgery. Using a state grant, a waste management expert and a recovery room nurse set up the program. Approximately 45% of the waste was plastic packaging, 45% sterilization wrap, and 10% paper, boxboard, and other miscellaneous materials. Any waste that was potentially contaminated was disposed of according to state and federal guidelines. Everyone in the operating room from physicians to housekeepers were trained in waste segregation with inservice programs, videotapes, and memos about specific guidelines. During the pilot program, blue recycling containers were placed in each of the 13 operating rooms, the recovery room, preoperative holding area, day surgery, and anesthesia and perfusionist work rooms. When the carts were filled, housekeeping staff replaced them with empty carts. Volunteers and helpers from a community agency for the developmentally disabled sorted the waste into various

categories of recyclable materials. A major obstacle was finding a market for materials and convincing recyclers that clean medical trash was safe if separated and handled correctly. Another challenge was finding adequate storage space for materials. One of the reasons for the program's success --- the nurse who started the program worked in the operating room and answered questions and provided encouragement on a daily basis (Patterson, 1991).

Most hospitals involve housekeeping or environmental services personnel in the collection of recyclable materials. The volume of waste that must be collected and transported is essentially unchanged, it is simply a matter of keeping recycling separate and training the housekeeping or environmental services personnel (Health Care Advisory Board, 1992).

In addition, education and staff awareness of the program is essential to success and must be on-going (Hemmes, 1991a). Internal communication has been accomplished through personnel education, surveys to measure staff support, memos in employees' paychecks, and staff and management meetings (Health Care Advisory Board, 1992). One technique used by health facilities to encourage staff participation in recycling programs was a "slogan/logo contest" where the "best" slogan was chosen to be used on posters, plastic mugs, stickers, and other public

relations tools. Some hospitals displayed posters from children's contests to enhance community involvement and staff awareness of the program. Also, quarterly newsletters have successfully kept staff informed about recycling programs' progress (King, 1992). Other tools used by hospitals to promote recycling programs and waste reduction efforts include: purchasing recycled and/or recyclable materials, providing ceramic or thermal coffee cups to staff and long-term patients with a discount on purchased beverages, and placing cardboard receptacles next to garbage disposals to increase convenience (Health Care Advisory Board, 1992).

Administrative support, especially from the CEO, is essential for success. Programs with administrative support, especially through actions (e.g., using recycled letterhead) tend to be more successful. Although the staff make recycling happen on a day-to-day basis, administrators' attitudes often set the stage for how the staff will respond to new programs. Therefore, CEO/administrator support is essential. In fact, recycling must be a defined management task of hospital administrators, otherwise, internal and external organizational conflict will make effective implementation difficult. Also, top management has an overall view of the organization and, therefore, can make

decisions about the system-wide ramifications of a recycling program (Health Care Advisory Board, 1992; Hemmes, 1991b; King, 1992; Re-utilisation and recycling of waste in hospitals, 1991).

Problems experienced by many hospitals include: a tende to "over-recycle" (e.g., place colored paper with white), lack of space, lack of organization, theft of aluminum cans, and excessive time required for collection and separation. On the other hand, successful strategies for hospital recycling have been to make the program as simple and convenient as possible, to implement in phases, and to have one person responsible for tracking the program and developing new strategies (Health Care Advisory Board, 1992).

Recycling is not new to the military; the Department of Defense (DoD) recouped $35 million in 1991. The Navy is currently in the forefront —— 95% of Navy installations have some form of recycling. During fiscal 1987-1991, sales of recyclables totaled $22.7 million. Successful Navy recycling program initiatives include: Joint Navy, Defense Reutilization and Marketing Service and National Recycling coalition workshops; management assistance visits to help with development/expansion of programs; the annual Secretary of the Navy's Recycling Awards Program; participation in Keep America Beautiful and National Recycling Coalition Awards

programs; and Network, a quarterly recycling newsletter (Stehle, 1992).

Army installations have participated in recycling programs since 1982. In fiscal year 1991, Army installations received $12.7 million; $9 million was transferred to morale, welfare, and recreation (MWR) accounts. In 1990, the Marine Corps MWR received $1.1 million (Stehle, 1992). In fiscal year 1991, the Air Force program generated $12 million (Stehle, 1992).

Naval Hospital Camp Pendleton, a 600 bed facility, recently implemented a hospital-wide recycling program. Camp Pendleton, a large Marine Corps Base in Southern California, requires that all tenant activities participate in materials recycling. After obtaining command approval and support, a recycling coordinator and committee members were chosen to plan and implement the program at Naval Hospital, Camp Pendleton. A waste audit and market analysis were conducted and the information used to develop a time-phased implementation plan. Program promotion was conducted through memoranda, newsletters, and announcements. Central collection areas were established, then closely and frequently monitored. Recycled materials included: computer paper, white paper, mixed paper, cardboard, aluminum, steel cans,

glass, and plastic. Although the program generated some revenue, cost slightly exceeded revenue (Frost, 1992).

While William Beaumont Army Medical Center may differ from Naval Hospital Camp Pendleton with regard to location and market for recyclables, many of the same techniques can be applied and/or modified to work in an Army medical center in El Paso, Texas.

In summary, the literature demonstrates that health facility's solid waste disposal practices should be identified, the volume of waste calculated, and a determination made about how much may be recycled. Health care administrators should conduct a cost-benefit analysis and rank recyclable materials in order of importance for recycling. In addition to recycling efforts, source reduction efforts and preferential purchasing of recycled and/or recyclable items should be implemented. Each department or service should be surveyed to identify the types and amount of recyclable waste. Identify or designate an area with adequate space to accommodate recycling containers. Develop a collection process and identify responsibility. When storing recyclable materials, fire safety codes and sanitation regulations must be met. All recycling activities must be documented and receipts from vendors must be collected and maintained. Education and

staff awareness of the program is essential to success and must be on-going (Hemmes, 1991b).

Purpose of the Study

The purpose of this research project is to establish an implementation plan for a recycling program at William Beaumont Army Medical Center, implement and evaluate a pilot program, and based on information gleaned from the pilot study, restate the hospital-wide recycling program plan. The plan's components will include an active recycling committee, data collection, and program design.

METHODS AND PROCEDURES

Subjects

Subjects for this study include WBAMC military and civilian staff. Subjects do not include patients or Fort Bliss personnel.

Study Design

Although support and guidance from the Commanding General, the Chief of Staff, and the Executive Officer will be essential, every attempt will be made to empower the committee members and the area coordinators to make the program work in their areas and throughout the hospital. Many programs are mandated by headquarters. However, by using volunteers and allowing them to design their own area plans, the hospital staff is likely to be more receptive to the program.

As suggested by Hemmes (1991a), the recycling program at WBAMC will include: a recycling committee, data collection, and a program design.

Recycling Committee The recycling committee or "team" is responsible for planning, implementing, and evaluating the recycling program. The team will be composed of representatives from areas with the greatest consumption of recyclable materials, individuals who have experience with other hospital recycling programs, and/or those individuals needed to ensure compliance

with hospital requirements for safety. The Hospital Executive Officer (XO) will appoint a hospital recycling coordinator (HRC) to manage the program, and to act as the point-of-contact for team members and area recycling coordinators. Volunteer or appointed area recycling coordinators will educate their area staff, monitor recycling program compliance in their areas, and report to the HRC. Committee meetings will include the XO, the HRC, area coordinators, and administrative representatives. At a minimum, the department of nursing, preventive medicine, pharmacy, nutrition care, the safety office, environmental services/housekeeping, and the medical units will each provide committee representatives. Other specialists, such as the infection control nurse, will be consulted as needed.

Initial meetings will involve detailed planning of the program. Once the program is implemented, they will serve as a forum to discuss program progress and improvement, share new ideas, and develop marketing strategies.

Data Collection Data collection prior to pilot program implementation will include: (a) a waste audit, (b) a market analysis, (c) an economic feasibility cost analysis; (d) a ranking of recyclable materials based on local mandates, volume produced, ease of implementation, and price received for recycling; and (e)

a survey of hospital staff to determine desirability of recycling within the hospital.

Five steps are proposed for data collection prior to the pilot program. First, materials that are mandated for recycling will be identified. Then the hospital's solid-waste disposal practices will be audited to identify how much waste is currently being generated and the cost for collection and disposal (See Table 1).

TABLE 1 **TOTAL WASTE AUDIT**

Waste Production*

Dumpsters (loose)

$$\frac{\#/wk\ (\#\ cu.\ yds\ ea.)\ X\ 52\ wks/yr}{12\ mo/yr.} = \_\_\_\#\ cu.\ yds\ (\#\ tons)\ per\ month$$

Back dock compactor (Compact)

$$\frac{\#\ cu.\ yds/pick\ up\ X\ \#\ pick\ up/wk\ X\ 52\ wks/yr}{12\ mo/yr.} = \_\_\_\#\ cu.\ yds\ (\#\ tons)/month$$

TOTAL NON-MEDICAL WASTE PRODUCTION ___# tons/month (# tons/yr)

Cost for Non-medical Waste Disposal (Tipping Fees)

$$\frac{\$\ per\ dumpster\ X\ \#\ pick\ up/wk\ X\ 52\ wks/yr}{12\ mo/yr.} = \$\_\_\_\_\_/month$$

$$\frac{\$\ per\ pick\ up\ X\ pick\ up/wk\ X\ 52\ wk/yr}{12\ mo/yr.} = \$\_\_\_\_\_/month$$

TOTAL COST FOR NON-MEDICAL WASTE DISPOSAL $\_\_\_\_\_$/month ($____/year)

*Conversion: Compacted waste = 700 lbs/cu. yd.; Loose waste = 175 lbs/cu. yd.

Second, the available markets for recyclables will be identified. Without local demand for an item, collection will not be economically feasible. The posaibility of selling to other local recycling agencies and/or tapping into markets outside the local area may be assessed as time and resources allow. Third, the economic feasibility of recycling specific materials will be determined. Environmental awareness and conservation are desirable goals, but monetary return will determine program success. Without revenue generation and/or cost avoidance, the program will likely lose staff and administrative support (See Table 2).

TABLE 2 ECONOMIC FEASIBILITY WORKSHEET

ESTIMATED ADDED COSTS		
1. Source separation and material preparation		
a. Equipment -	$XXX.XX	
b. Labor -	XXX.XX	
2. Collection and Storage		
a. Equipment-	XXX.XX	
b. Labor -	XXX.XX	
3. Program Administration	XXX.XX	
TOTAL COSTS		$XXX.XX
ESTIMATED AVOIDED COSTS AND REVENUE		
1. Tipping Fee Savings	$XX.XX	
2. Sales Revenue		
# lbs. recycled X $0.01/lb. white paper =	XX.XX	
# lbs. recycled X $0.02/lb. computer paper =	XX.XX	
# lbs. recycled X $0.005/lb cardboard =	XX.XX	
TOTAL REVENUE		$XXX.XX
ESTIMATED RETURN		
AVOIDED COSTS AND REVENUE MINUS TOTAL COSTS =		$XXX.XX

(Adapted from the Installation Recycling Guide, p. 27)

Fourth, recyclables will be ranked based on mandates, volume produced, ease of implementation, and potential profit (See Table 3). Mandated items will be recycled first, followed by those items that will generate the most revenue and/or the most staff support. Fifth, a hospital recycling survey will be conducted to determine staff opinions on desirability and willingness to support a hospital recycling program (See Figure 1).

TABLE 3 IMPLEMENTATION RANKING TOOL

Item	Potential Staff Support	Cost	Ease of Implementation	$$/lb Return	Potential Volume Produced	Total Points
Cardboard:						
Paper:						
o Computer						
o White Bond						
o Colored						
o Newspaper						
Glass:						
Aluminum:						
Steel:						
Plastic:						

NOTE: Use the rating of High (H), Medium (M), or Low (L), a score of 1 (least desirable) to 3 (most desirable) was assigned. The scores will then be totaled in the far right hand column. Collection and recycling of those items with the highest scores will be implemented first.

Data collected during and immediately following the pilot studies will include: volume of paper recycled by each pilot area, revenue generation and cost avoidance analysis, staff support and input by using surveys (See Figure 2), area coordinator input using surveys (See Figure 3), effectiveness of staff education using spot checks for appropriateness of materials in recycling bins, and compliance with the safety standards set by the hospital safety officer. The HRC and the recycling committee's goal is to maintain staff support by efficiently and effectively administering the program, by soliciting and using staff input to improve the program, and by keeping the staff informed about the program.

Program design Program design components will include: an implementation plan with pilot program policy guidance; compliance with safety standards, staff education and training; documentation of specific recycling area activities; and establishment of program implementation time lines. A pilot study will be conducted before hospital-wide implementation with objective criteria for success.

The recycling committee will develop an implementation plan which will include duty descriptions, and written policies and procedures for the pilot recycling program. The hospital recycling coordinator (HRC) will train the area coordinators who, in turn, will train area staff. All committee members and area coordinators

will receive copies of duty descriptions and policies along with a verbal explanation by the HRC.

Storage of recycling containers will comply with the WBAMC safety management program, and the Life Safety Code (LSC) of the National Fire Protection Association (NFPA). Area coordinators, in consultation with the HRC, will be responsible for safety standard compliance. All staff members will report safety violations to their area coordinators or the HRC. Periodic inspections and consultation with the hospital safety officer by the HRC will ensure that these standards are developed and met. Safety inspection findings will be recorded and reported at recycling committee meetings.

An education campaign will announce the new program and seek staff and community support using inservices, facility newsletters and bulletins, and new employee orientation. The educational information will focus on recycling benefits, policies and procedures, and who to contact for more information. Education of a similar type will occur periodically to reinforce program goals and benefits.

Pilot program recycling activities will be documented by the area coordinators as follows: volume recycled, successful techniques used in the areas, problems encountered, and plans for

the future. This data will be provided to the HRC who will compile, evaluate, and incorporate the information into the hospital-wide recycling plan.

Program implementation time lines will provide objective goals for program implementation. The task lists and dates for completion will be established and updated by the recycling committee and records of actual completion maintained by the HRC.

To test the program design, pilot study areas will include, as a minimum, two clinic areas, two office areas, and one ward. Area coordinators will monitor staff morale, compliance with policies, and changes in work flow or procedures, and report their findings to the HRC. Follow-up evaluation will be ongoing with program changes made as needed. The HRC will discuss significant changes with the area coordinators and publish them in the newsletter and/or the WBAMC Weekly Bulletin. The data collected from the pilot studies along with the staff surveys will be used to modify the initial policies and improve implementation plans. The HRC will develop a plan for incremental expansion of the program throughout the medical center, and present it to the committee for approval (Adapted from Hemmes [1991a]).

Analysis Criteria For Success

Objective criteria used to evaluate the program's success will include:

1) Demonstrated revenue generation and/or cost savings;

2) Demonstrated effective staff education, to include: documented in-services, spot checks of recycling containers to ensure staff understanding of program policies, a recycling program survey quiz, and regularly published program updates;

3) Data collection prior to pilot program implementation to include: a waste audit, market analysis, economic feasibility cost analysis, ranking of recyclable materials for implementation priority, and a hospital-wide recycling survey; data collection during and immediately following the pilot program implementation to include: volume of paper recycled in each pilot area, revenue generation/cost analysis, and staff and area coordinator survey results;

4) Documented substantial compliance with hospital safety standards, by using periodic unannounced inspections and monitoring hospital risk management reports;

5) Documented survey results to measure staff support for the program and elicit ideas for program improvement.

RESULTS

Recycling Committee

The recycling committee included: the hospital executive officer (XO), the administrative resident, the safety officer, and representatives from each of the three medical units, and a representative from environmental services, preventive medicine, nursing, information management, pharmacy, nutrition care, and property management. The XO appointed the administrative resident to act as the Hospital Recycling Coordinator (HRC). Committee meetings were held every two weeks. The HRC developed meeting agendas and provided a copy to each committee member. The XO and/or the HRC conducted meetings in an informal manner.

Pilot study areas included: the intensive care units (medical, surgical, and coronary), two general medicine nursing wards, the dental clinic, information management division, pharmacy, the medical library, the pediatric clinic, nutrition care division, and the command suite. Pilot area coordinators also functioned as active committee members.

Data Collection: Prior to the pilot study

Waste audit, market analysis, and economic feasibility cost analysis:

Area coordinators reported the average amount of white paper used in a 4 week period (See Table 4). The initial goal of the pilot program was to recycle 15% of the paper used in each area. Information on volume and cost of waste hauled away from WBAMC was obtained from the Directorate of Installation Services on Ft. Bliss (See Table 5). Market analysis consisted only of determining what materials could be recycled at the Fort Bliss recycling center and the monetary return per pound of each material. An economic feasibility analysis was completed prior to the implementation of the pilot program (Table 6).

TABLE 4

ESTIMATED PAPER UTILIZATION IN PILOT AREAS

Area	Lbs. of white paper per month
Command Suite	200
Dental Clinic	50
Information Management Division	350
Intensive Care Units	750 500 (computer)
Medical Library	100
Nutrition Care Division	200
Pediatric Clinic	50
Pharmacy (inpatient)	100
Ward 9W	300
Ward 10W	300
TOTAL	2400 lbs. white 500 lbs. computer

Estimated Amount for recycling: Initial goal of 15% of total paper used in the pilot areas.

TABLE 5

TOTAL WASTE AUDIT - prior to the pilot program

Volume Non-medical Waste Disposal*

Dumpsters (Loose)

2/wk (8 cu. yds ea.) X 52 wks/yr = 69.3 cu. yds (6.06 tons) per month
12 mo/yr.

Back dock compactor (Compact)

30 cu. yds X 6 days/wk X 52 wks/yr = 780 cu. yds (273 tons) per month
12 mo/yr.

Total Volume Non-medical Waste Disposal= 279.06 tons/mo (3348.77 tons/yr)

Cost for Non-medical Waste Disposal

$6.14 per dumpster X 2/wk X 52 wks/yr = $53.21/month
12 mo/yr.

$86.41 per pick up X 6/wk X 52 wk/yr = $2,246.67/month
12 mo/yr.

Total Cost of Non-medical Waste Disposal = $2,299.88/mo ($27,598.56/yr)

*Conversion: Compacted waste = 700 lbs/cu. yd.
Loose waste = 175 lbs/cu. yd.

Market Analysis: No market analysis was conducted due to the ability to utilize the Ft. Bliss Recycling Center.

TABLE 6

ECONOMIC FEASIBILITY ANALYSIS PRIOR TO ONE MONTH PILOT STUDY

ESTIMATED ADDED COSTS

1.	Source separation and material preparation	
	a. Equipment - 44-gallon recycling cans (on loan from Recycling Center)	$000.00
	b. Labor - pilot area staff (time req'd = minimal) - area coordinators (2 hrs./month)	000.00*
2.	Collection and Storage	
	a. Equipment	
	o Wheeled storage containers (4 @ $169 ea.) (Prorated over 4 weeks assuming 10 year life span)	$ 5.20
	o Flatbed wheeled cart (1) (already own)	00.00
	b. Labor - provided at no cost to gov't by minimal security prisoners	000.00
3.	Program Administration	
	XO (2 hrs/mo.); HRC (24 hrs/mo.); Property Book Manager (1 hr/mo.); Secretary (1 hr/mo.); Committee members (2 hrs/mo.)	
	TOTAL ADDED COSTS	$ 5.20

*Labor time spent on recycling is not compensated for, nor does it displace other duties.

***** Continued next page *****

TABLE 6 (Continued)

Economic Feasibility Worksheet (continued)

ESTIMATED AVOIDED COSTS AND REVENUE (Assuming pilot areas collect 15% of the estimated monthly usage)

1. Tipping Fee Savings	$ 1.78
$0.0041 per pound X (15% of 2900 lbs.)	
2. Sales Revenue**	
15% of 2400 lbs. X $0.01/lb. = $3.60	
15% of 500 lbs. X $0.02/lb. = 1.50	
TOTAL AVOIDED COSTS AND REVENUE	6.88

ESTIMATED RETURN

Avoided costs and revenue minus total added costs = $1.68

**Assuming an estimated total of 15% of paper used in pilot areas will be recycled.

(Adapted from the Installation Recycling Guide, p. 27)

Ranking of recyclable materials:

There were no local mandates for recycling; therefore, this ranking criteria was dropped. However, the other criteria were used by the recycling committee to rank materials based on an objective point system (See Table 7). Based on the results of this tool, the committee decided to begin recycling white paper, colored paper, and corrugated cardboard. Aluminum was given a high score; however, rather than include in the hospital recycling program, each area was encouraged to start their own aluminum recycling program. Likewise, computer paper also received a high score; however, it was only used in quantity by one pilot area. Therefore, it was collected by that area only.

TABLE 7

RANKING OF RECYCLABLE MATERIALS

Item	Potential Staff Support	Cost	Ease of Implementation	$$/lb Return	Potential Volume Produced	Total Points
Cardboard	M (2)	L (3)	H (3)	0.005 (1.5)	H (3)	12.5
Paper:						
Computer	H (3)	L (3)	H (3)	0.02 (2.5)	L (1)	12.5
White Bond	H (3)	L (3)	H (3)	0.01 (2.0)	H (3)	15.0
Colored	H (3)	L (3)	H (3)	0.0025 (1.0)	L (1)	11.0
Newspaper	M (2)	L (3)	M (2)	0.0025 (1.0)	L (1)	9.0
Glass*	M (2)	M (2)	L (1)	0.0025 (2)#	M (2)	9.0
Aluminum*	H (3)	L (3)	M (2)	0.26 (3.0)	M (2)	13.0
Steel*	M (2)	M (2)	L (1)	0.005 (3.0)	H (3)	11.0
Plastic*	M (2)	L (1)	L (1)	0.01 (2.0)	H (3)	9.0

NOTE: Use the rating of High (H), Medium (M), or Low (L), a score of 1 (least desirable) to 3 (most desirable) was assigned.

*Must be cleaned and stored properly, therefore, would require considerable training and follow-up to ensure that infection control policies are upheld.

Glass was given a medium rating on price due to weight.

Survey of hospital staff:

A hospital-wide survey was distributed and collected to obtain information on staff support and feelings about recycling within the hospital (See Figure 4). An overwhelming majority expressed the desire for a hospital-wide recycling program (97%) and were willing to separate materials (96%) for recycling.

Data Collection: During and immediately following the pilot study

Volume of paper recycled by each pilot area:

Area coordinators maintained records on the total amount of paper taken to the recycling collection point. A total of 58% of the estimated amount of paper used was recycled during the six week pilot program. The hospital laundry scales were used to weigh the paper (See Table 8).

TABLE 8

Paper Recycled in Pilot Areas

Areas	Estimated paper used in 6 weeks (lbs.)*	Amt Recycled in 6 weeks	% Recycled
Command Suite	300	76	25%
Dental Clinic	75	75	100%**
Intensive Care Units	1125	350	31%
Information Management	525	100	19%
	750 (computer)	371 (computer)	49%
Medical Library	150	50	33%
Nutrition Care Division	300	200	67%
Pediatric Clinic	75	100	133%**
Pharmacy (inpatient)	150	200	133%**
Ward 9W	450	900	200%**
Ward 10W	450	94	21%
TOTAL - White paper:	3600 lbs. white	2145 lbs.	60%
- Computer paper:	750 lbs. computer	371 lbs.	49%
		Total	58%

*Extrapolated from the one month estimated usage data.

**Note: High percentages, especially those equal to or greater than 100%, are probably due to inaccurate utilization estimations, stockpiling of paper in anticipation of the recycling program, and/or "donations" from other areas.

Revenue generation and cost avoidance analysis:

An actual cost analysis was conducted based on data collected from pilot study areas and actual cost of supplies purchased through property management (See Table 9).

TABLE 9

COST ANALYSIS FOLLOWING THE PILOT STUDY

ACTUAL ADDED COSTS

1. Source separation and material preparation	
a. Equipment - 44-gallon recycling cans (on loan from Recycling Center)	$000.00
b. Labor - pilot area staff (time req'd = minimal) - area coordinators (1 hr/mo.)	000.00
2. Collection and Storage	
a. Equipment	
o Wheeled storage containers (4 @$169 ea.) (Cost for 6 weeks assuming 10 year life span)	$ 7.80
o Flatbed wheeled cart (1) (already own)	
o Large cardboard storage boxes (3 @ $80 ea.) (Cost for 6 weeks assuming a six month life span)	55.38
b. Labor - delivered to pickup point by area coordinators (1-2hrs/mo)/picked up by recycling center personnel.	000.00*
3. Program Administration	
XO (3 hrs/mo.); HRC (32 hrs/mo.); Property Book Manager (1 hr/mo.); Secretary (2-3 hrs/mo.); Committee members (2 hrs/mo.)	000.00*
TOTAL ADDED COSTS	$ 63.18

* Labor time spent on recycling is not compensated, nor does it displace other duties.

TABLE 9 (Continued)

COST ANALYSIS FOLLOWING THE PILOT STUDY

AVOIDED COSTS AND REVENUE**

1. Tipping Fee Savings

   o $0.0041/lb. X 2516 lbs. paper recycled = $10.32
   o $0.0041/lb. X 5922 lbs. cardboard recycled = $24.28

2. Sales Revenue

   o 2145 lbs. white paper X $0.01/lb. = $21.45
   o 371 lbs. computer paper X $0.02/lb. = $ 7.42
   o 12 boxes cardboard X 2.82 cu.yd./box
     X 175 lb/cu.yd. X $0.005/lb. = $29.61

TOTAL AVOIDED COSTS AND REVENUE $ 93.08

ACTUAL (POTENTIAL) RETURN

Avoided costs and revenue minus total added costs = $29.90

** Represents potential savings only. Tipping fees (charge for non-medical waste pick up) come out of a lump sum Base Operations (BASOPS) funds and will not be refunded to the hospital. Also, since the recycling center picks up, WBAMC is not compensated for recycling.

(Adapted from the Installation Recycling Guide, p. 27)

Staff support and input using surveys:

After the six week recycling pilot study was complete, the staff working in the pilot areas were surveyed to obtain information about program success, staff support, ideas for improvement, and knowledge of appropriate materials for recycling (See Figure 5).

Area coordinator input using surveys:

After implementation of the pilot program, area coordinators were surveyed to assess staff support, effective and ineffective educational techniques, future recycling plans, and general observations of the recycling program within their areas (See Figure 6).

Effectiveness of staff education:

The HRC conducted spot checks no less than weekly. Gradual improvement in knowledge of recycling was noted based on appropriateness of recycling container contents; however, the average score of the pilot program recycling survey quizzes was 67.4%.

Compliance with safety standards:

The HRC performed unannounced spot checks on all the pilot study areas at least weekly. The WBAMC Safety Officer performed random safety inspections throughout the duration of the pilot study.

The initial inspection revealed that the following area were not in compliance with the safety standards: the ICUs, Ward 9W, and Information Management. The ICU and Information Management both placed containers in the hall which presented a safety hazard. To remedy this problem, the ICU area coordinator placed the containers in an outdoor patio area; the Information Management area coordinator placed the container inside the copy room. Ward 9W initially placed the containers in the patient lounge area which could not be sealed off in the event of a fire; therefore, the containers were moved to the soiled linen room.

All non-compliance with safety standards for the recycling program were corrected immediately. The HRC consulted with the Safety Officer to ensure that the placement of containers was appropriate. All subsequent safety inspections during the program revealed compliance by pilot study areas.

Program Design

Program design consisted of: an implementation plan and pilot program policy guidance, compliance with safety standards, staff education and training, documentation of specific recycling area activities, and establishment and utilization of a program implementation time line. A pilot recycling program was implemented

with objective criteria for success. A hospital-wide recycling program plan was developed based on the results of the pilot study.

Implementation plan and pilot policy guidance:

The HRC wrote and presented to the committee for revision and approval, duty descriptions for the area recycling coordinators (See Figure 7) and the hospital recycling coordinator (See Figure 8) as well as written policies and procedures for the pilot program (See Figure 9). Once approved, the HRC provided copies of the duty descriptions and policies to all members of the recycling committee and the area coordinators with a brief verbal explanation of each. The pilot policy was also published in the WBAMC Weekly Bulletin.

Compliance with safety standards:

To ensure compliance with fire, safety, and infection control standards, a recycling program safety policy was written by the HRC and the Safety Officer; a copy was provided to the committee members and the area coordinators (See Figure 10). Inspections were conducted no less than weekly by the HRC and at random by the Safety Officer. Although a few pilot areas initially did not meet safety requirements, inappropriately placed containers were relocated upon discovery by the HRC or the Safety Officer. Solutions reached to ensure safety compliance were discussed with the recycling committee to prevent similar safety violations in other areas.

Staff education and training:

Prior to and throughout the pilot program, the HRC published numerous educational articles, flyers, and memoranda. A memorandum from the Chief of Staff explaining the program along with an educational flyer was distributed to all areas of the hospital (See Figure 11 and Figure 12). A flyer on the recycling classes presented at the Fort Bliss recycling center was distributed to area coordinators and through hospital-wide distribution to all areas of the hospital (See Figure 13). An article and flyer on why recycling is important was printed in the WBAMC Weekly Bulletin and distributed by the area coordinators to their sections (See Figure 14). Another article was published in the WBAMC Weekly Bulletin prior to Earth Day explaining how to start a home recycling program (Figure 15). Also, an article about the pilot program and how to get involved in recycling was in the WBAMC Newsletter (See Figure 16).

Documentation of specific pilot program recycling activities:

Pilot studies ran for six weeks. Each area coordinator provided information on: volume recycled, successful techniques used for staff education, compliance and acceptance of the program, problems encountered, and future implementation/expansion plans.

Data from pilot program area coordinators and staff surveys was used to develop hospital-wide policies.

Program time line:

A task list with time lines was used to set objective goals for completion of tasks within a specified time and the responsible individual(s) for each task (See Table 10). The task list was maintained and updated by the HRC. It was used to determine program progression and assist the committee in staying on track with the program.

TABLE 10 RECYCLING PROGRAM TIME LINE

TASK	RESPONSIBLE INDIVIDUAL(S)	DUE DATE	DATE COMPLETED
Justification/job description for federal prisoner	Property Book Manager (PBM) HRC		
Written:		Oct, 92	Oct, 92
Submitted to:			
LTC Kohler		Oct, 92	Oct, 92
Prison Liaison		Nov, 92	Nov, 92
Resubmitted with modifications		Dec 17, 92	Dec 15, 92
Receive training from federal prison	PBM (Absent) Warehousemen (2) HRC	Jan, 93	Jan 14
Hire and train federal prisoner	Hospital XO PBM	N/A	Not appropriate in a hospital setting.
Submit job description to CPO	PBM HRC	Jan, 93	Jan 21

TABLE 10 (Continued)

TASK	RESPONSIBLE INDIVIDUAL(S)	DUE DATE	COMPLETED
PILOT STUDY			
Write Policy	HRC	Jan 8, 93	Jan 8
Committee Approval of policy	Committee members	Jan 19, 93	Jan 19
Coordinate pick up with Recycling Center	HRC	Jan 29, 93	Jan 29
Train Area Coordinators	HRC Recycling Center	Jan, 93	Mar, 93
Publicity	HRC	Jan, 93	On-going
Initiate Pilot Study	Area Coordinators HRC	Jan, 93	Feb 17, 93
ICUs, Wards 9W and 10W, Dental Clinic, Nutrition Care, Command Suite, Pediatric Clinic, Pharmacy, Information Management, & Medical Library			
Complete Pilot Study	HRC	Feb, 93	Mar 31, 93
Conduct inspections of pilot areas	HRC	Weekly	26 Feb, 8, 12, 25, & 30 Mar
Monitor each pilot area's weight of recyclable materials	Area Coordinators	Bi-weekly	6 Apr 93
Survey area coordinators and pilot study staff	HRC	31 Mar 93	6 Apr 93
Develop Plan for Hospital Recycling Program	HRC	May, 93	May, 93

Hospital-wide Recycling Program Plan

With future known budget decrements, the probability of hiring wage grade employees to collect recyclable materials is minimal. Two local individuals have expressed a desire to collect the recyclable materials from throughout the hospital for a share of the profit. A hospital recycling policy (See Figure 17), an educational flyer (See Figure 18), and a statement of work for collection agreement (Figure 19) have been drawn up and are pending approval by the Executive Officer. William Beaumont Army Medical Center's portion of any revenues generated will be maintained in the unit's funds and used for functions such as Organization Day.

Upon completion of the pilot program, a Commander's Letter (See Figure 20) was developed by the HRC and the recycling committee. Pending approval by the Commander, this letter will be distributed throughout the hospital via the administrative staff.

The HRC ordered lapel pins with the recycling emblem as rewards for participation in the pilot program. Desk top recycling containers were also ordered for the pilot staff to increase the convenience of recycling.

DISCUSSION

Although revenue generation and cost savings were not actually realized, the potential for both were present during the pilot study. The hospital-wide plan for recycling will include a plan to have recyclable materials collected throughout the hospital and delivered to the recycling center. A memorandum of understanding has been drawn up between the Executive Officer and two local individuals who have expressed an interest in recycling for a percentage of the monetary return. The statement of work was developed by the HRC and approved by the recycling committee. With this agreement, not only will monetary returns be realized through delivery of recyclable materials to the recycling center, but the workload of the WBAMC area coordinators will be decreased and the program may be expanded to include a variety of other recyclable waste materials in all areas of the hospital.

In addition, incentives to save money in military health care facilities will increase in the future. An increase in recycling will result in savings on tipping fees.

In spite of the availability of the recycling classes and individual area coordinator's efforts to provide education, many recycling questions remained unanswered. Although area coordinators received standardized instruction on duty descriptions, appropriate

materials for recycling, the benefits and rewards for recycling, the information apparently was not adequately disseminated to all staff working in the pilot study areas. Surveys of the pilot program personnel indicated a desire for more training, and in fact, an average score of 67.4% on the Pilot Program Recycling Survey Quiz (See Figure 5) indicated that more training was indeed needed. While the Fort Bliss recycling classes were available to all interested WBAMC personnel, they were held approximately 5 miles from the hospital and no one except the area coordinators took advantage of the opportunity to attend.

In an attempt to alleviate this communication gap, the hospital-wide recycling plan will include a video tape on recycling, plus a pamphlet on the WBAMC Recycling Program and the Fort Bliss recycling center. By using a video tape to explain how the program operates, what materials can be recycled, and why recycling in a hospital environment is important, inservices and new employee orientations will be standardized, convenient, and readily available to all the staff. The video tape will be maintained and checked out through the Office of the Executive Officer.

Although information on total non-medical waste removal was available through the Directorate of Installation Support at Ft. Bliss, no specific information on different types of waste or amount

of recyclable waste was available. For a minimal fee, the El Paso Sanitation Department will provide a waste audit. However, due to funding limitations, a formal waste audit was not performed, instead, the ranking tool shown in Table 8 on page 41, the survey of hospital staff in Figure 1, plus information gathered from the literature search were used to determine which materials would be recycled initially. In order to capture a greater percentage of recyclable materials currently being sent to the Fort Bliss landfill, a detailed waste audit by a qualified company would be desirable.

Aside from obtaining information on what materials were acceptable at the Fort Bliss Recycling Center and the amount paid per pound, no additional market analysis was conducted. Initially, the plan was to request use of prisoners from the El Paso Prison Camp located at Biggs Airfield to deliver to the Fort Bliss Center; therefore, additional market analysis was not deemed necessary since the prisoners were not allowed to drive to other parts of El Paso. Unfortunately, after attending a class on supervision of prisoners, the HRC and the XO decided that our inability to provide continuous, close supervision, and the prisoners' potential ability to obtain access to telephones, medical supplies, and sensitive computer

information resulted in the decision not to use prisoners for recycling program support.

The next step was to request Wage Grade 1 or Wage Grade 2 employees to collect and deliver materials from WBAMC to the Fort Bliss Recycling Center. The job descriptions were written by the HRC and submitted to Civilian Personnel Office (CPO); unfortunately, this plan was also not feasible. With the hiring freeze and budget cuts, wage grade employees could not be hired for the recycling program. Therefore, the responsibility for collecting materials throughout the hospital and delivering to the central collection point fell to the area coordinators. The Fort Bliss recycling center was contacted and the supervisor agreed to pick up paper and cardboard from the hospital's back loading dock area three days per week; however, under this arrangement, WBAMC would not receive any money for the recycling.

The cost analysis worksheet proved to be very useful in estimating the cost and potential profit for the recycling program. Unfortunately, without delivery capabilities, revenue could not be collected, and under the current system of cost accounting, tipping fees, part of a lump sum Base Operations Fund (BASOPS), could not be decreased. However, the economic feasibility cost analysis did

demonstrate that both revenue and cost avoidance are possible with this program.

The tool used to rank materials was developed by the HRC in an attempt to provide an objective method for selection of materials to be recycled. In fact, using group consensus to reach a decision on the scoring of individual materials proved a very effective method of determining implementation priorities.

Surveys of the pilot program employees resulted in several suggestions for waste reduction to include: increase awareness and conservation practices, improved consolidation of data on the Hospital Information System (HIS) computers, reuse of the back of previously used paper, improve Electronic-mail (E-mail) capabilities, and modified purchasing practices. Based on these suggestions, the hospital-wide recycling program plan will include a plan to purchase and use recycled paper throughout the hospital, to expand the recycling program, and to determine the feasibility of consolidating patient information on the HIS system and increasing the use of E-Mail throughout the hospital. The Chief of Administrative Services Branch, Headquarters has been tasked with conducting a feasibility study for purchasing and using recycled paper at WBAMC. The HRC will continue to coordinate program

expansion, computer system data consolidation, and increased use of Electronic-mail.

The safety policy was revised and updated throughout the pilot study. Although the Safety Officer was involved from the beginning, it was extremely difficult to elicit a tangible recycling safety policy from him. In the beginning, he was somewhat lenient and ambiguous about specific safety policies; however, after the pilot program was implemented, he became very strict. It was not until after the pilot program was complete that he provided a finalized safety policy for recycling within the hospital.

Finding space for recycling containers that complied with safety standards set by the safety officer became a difficult, but not insurmountable problem. Violations were corrected on the spot and, once corrected, did not occur again during the course of the pilot program; however, convenience and staff participation was often sacrificed when containers were placed in out-of-the-way places.

Staff and area coordinator surveys proved very useful in determining how well information was being disseminated and general feelings about the program and recycling. Based on survey comments, the HRC decided to develop a videotape presentation that may be used for inservice training and WBAMC newcomer's orientation to improve

communication of recycling information to the WBAMC staff members. Also, based on survey results, the HRC decided to continue to expand the program since the vast majority of those surveyed felt that WBAMC needed a hospital-wide recycling program (90%) and were willing to continue separating materials (94%). In addition, since the majority (54%) of those surveyed indicated that conservation and waste reduction were the most important motivational factors for continuing to recycle, the HRC will continue to publish articles about conservation and recycling in the WBAMC Bulletin, newsletter, and other publicity tools.

The recycling committee represented a cross-section of the hospital staff. Meetings provided the opportunity for face-to-face communication and on-the-spot policy decisions. Conflict with shift work, leave schedules, and other meetings made attendance by all committee members at every recycling committee meeting impossible. To ensure communication of issues to all members, those who were unable to attend meetings were provided with an agenda and called or visited by the HRC. This allowed members to stay current on committee activities.

In an attempt to ensure enthusiasm and success for the program, the committee was comprised mostly of volunteers. Those who volunteered to be area coordinators actively participated. Non-

volunteer committee members attended meetings and provided input; however, did not become involved in the day-to-day activities of the program. Most area coordinators worked hard to make the program a success in their areas; therefore, the hospital-wide plan will continue to use the area coordinator concept.

The appointment of a hospital recycling coordinator (HRC) ensured that there was one person to put the committee's ideas into action and follow through with the administrative details. The HRC also provided a single point of contact for area coordinators, thus decreasing the communication gaps that might otherwise have resulted.

Although area coordinators presented information on recycling to personnel within their areas and posted flyers directly on recycling receptacles, a variety of non-recyclable materials appeared in the containers located in the work areas. Most areas discontinued the collection of mixed paper because inappropriate materials and trash were being placed in the containers. White computer paper turned out to be the easiest and least likely to be contaminated material to collect. Additionally, the centrally located receptacles were also contaminated with inappropriate materials.

Although the HRC disseminated information to all staff within the hospital through memoranda, announcements at meetings, and publications in the hospital bulletin and newsletter, the main communication focus was on the pilot study areas and their coordinators. Other departments in the hospital, however, did not want to wait until the hospital-wide program was started and decided to contribute to the recycling bins on the hospital's back loading dock. The HRC made periodic checks and, whenever possible, traced the materials to individual departments. The HRC presented the inappropriate materials to the section supervisor who, in turn, informed his/her staff.

Also, since other areas used the recycling receptacles both in the hospital and outside in the loading dock area, the number of pounds of paper recycled in each pilot area is probably not accurate due to these "contributions" from other areas.

There were several delays in implementation of some of the program components since the HRC was not in a position of authority within the hospital. For example, the pilot study was originally scheduled to start in November; however, due to delays in the ordering of collection carts, it was necessary to postpone the pilot program until the middle of February. Once ordering these carts became a priority, however, the program proceeded as planned.

Conducting a pilot program prior to hospital-wide implementation turned out to be a very useful learning technique. By starting small in a variety of areas, problems were discovered before they became major issues. By using lessons learned, the HRC was able to make well-informed decisions and recommendations for expansion of the program.

Although the idea of a strictly voluntary program seemed appealing to the HRC and the XO, I would recommend placing as much command emphasis on the program as possible, especially in times of decreasing resources and personnel. Strong command emphasis would have increased participation as well as allowed the HRC to more easily accomplish the tasks needed to start a hospital-wide recycling program.

As stated in the proposal, space constraints and staff education were indeed a challenging part of the recycling program. The requirements of the safety policy eliminated many of the areas that were considered appropriate for placement of recycling containers. In addition, the containers themselves were very large and required a considerable amount of space. Staff education in a facility as large as WBAMC was also a significant challenge. Despite a concerted effort on the part of the HRC and the pilot area coordinators, many gaps in education occurred throughout the

facility. However, with the knowledge that information was not disseminated effectively, the HRC and the committee members now are aware that more emphasis needs to be placed on education.

Another concern about recycling paper from a healthcare facility was the issue of privacy act information. This problem was handled appropriately by providing covered containers with clear markings that paper was to be shredded. Arrangements were made by the HRC with the Fort Bliss recycling center to ensure that paper containing sensitive information was handled appropriately. If other local recycling centers are included in the hospital-wide recycling program, the same arrangements will also be required to prevent the release of any sensitive information.

CONCLUSIONS AND RECOMMENDATIONS

William Beaumont is a major United States Army Medical Center, however, it does not have a formal hospital-wide recycling program. For reasons of federal mandate, ethics, revenue generation and waste disposal cost avoidance, plus improved community relations, William Beaumont Army Medical Center (WBAMC) should initiate a recycling program.

The purpose of this research project was to establish a workable implementation plan for a recycling program at William Beaumont Army Medical Center. Based on information drawn from other programs, the literature, and the results of the WBAMC pilot recycling program, an individualized program was designed specifically for WBAMC. The plan's components included an active recycling committee, data collection, and program design.

Recommendations for the hospital-wide recycling program are as follows:

1. Increase Command Emphasis:

Although, on the surface, voluntary participation seemed desirable, maximum participation was difficult to obtain. To achieve this goal, a Commander's letter has been drafted and awaits approval by the hospital Commander. With top leadership emphasis,

the program will receive more support from the staff within the hospital.

While the program is currently run by the hospital Executive Officer, the responsibility should be shifted to the Logistics Division, Environmental Services. This section currently handles the hazardous materiel/waste management control program. Recycling is part of waste management. The housekeeping contract is also handled through Environmental Services and, in the future, may be modified to include pick up and delivery of recyclables to a central location within the facility. The WBAMC Commander must, however, make this a duty for the Chief of Logistics *if this plan is to work.*

2. Increase/Improve Education:

Although information was made available, it was not effectively disseminated to all staff members involved in the pilot program. To make recycling information more accessible and understandable, a videotape and accompanying WBAMC pamphlet will be used for inservice and newcomer's orientation training. Also, articles will continue to be published by the HRC in the WBAMC Bulletin, Newsletter, and post newspaper as an educational tool. Area coordinators and an HRC will continue to be used to provide one point of contact for involved WBAMC staff members.

3. Provide Collection Throughout The Hospital/Expand The Program:

Ninety percent (90%) of those surveyed thought the program should be expanded hospital-wide. In order to best accomplish this task, it will be necessary to provide pick up and delivery of recyclable materials which would allow WBAMC to increase types and volume of materials recycled, decrease area coordinator workload, generate income, and decrease tipping fee costs. Although it would be possible to continue using area coordinators to pick up and deliver recycling, the transient nature of the military and the already high workload, would make successful expansion unlikely. Pick up may be provided through an agreement with local individuals, hiring of wage grade employees, volunteers, or modification of the housekeeping contract to include recycling pick up.

In order to provide accurate information on recycling potential within the facility, the El Paso Sanitation Department or another qualified agency should conduct a hospital waste audit/evaluation. With this information, the volume and types of materials that may be recycled will be determined, and a more comprehensive recycling plan may be developed to include a wider variety of materials.

4. Conduct A Feasibility Study Of Purchasing And Utilizing Of Recycled Paper:

Unless recycled products are used, the loop of recycling is not complete. Several areas must be addressed prior to the transition to recycled paper. Purchase agreements must be made at a price that is reasonable; printer and copy machine compatibility as well as maintenance agreements must be considered.

Hospitals must use recycling as a tool to preserve the environment (Milford Hospital, 1991) and to reduce waste disposal costs. Recycling saves energy and raw materials. It reduces water and air pollution. The U.S. recycles only 11% of its waste as compared to 30% in Western Europe and more than 50% in Japan (The Global Ecology Handbook, 1990). With our landfills filling up and incineration's high cost and potential negative environmental effects, recycling's time is now. Department of Defense facilities should lead the way.

Figure 1

Survey sent to hospital staff prior to implementation of the pilot program

HOSPITAL RECYCLING SURVEY

We're planning to start a recycling program at WBAMC. Please take a minute to fill out the following survey. Thank you!

Do you recycle at home? YES NO

Do you feel there is a need for hospital-wide recycling at WBAMC? YES NO

If so, please circle the items you would like to see recycled?

Paper -- computer/white bond/colored Plastic Newspaper

Glass Aluminum cans Cardboard Metal cans

Other _____

Would you support a recycling program at WBAMC? YES NO

Would you be willing to separate items to be recycled? YES NO

Where do you work? _____

In your work area, where is the most convenient location for recycling receptacles?

_____

Would you be interested in hosting a pilot study in your work area?
YES NO

Do you have ideas for a WBAMC recycling slogan? NO YES _____

_____

Other Comments: _____

_____

Thank you for your support! Please return this survey to CPT Sweet, Administrative Resident, Command Suite (2nd floor), (Distribution STOP 1; Phone - 4-2401).

Figure 2

Survey for pilot program staff after pilot program implementation

PILOT PROGRAM RECYCLING SURVEY

Please take a minute to fill out the following survey.

Where do you work? _____

Who is your recycling coordinator? _____

Did you receive enough information from your area coordinator about recycling? YES NO

Do you know where the recycling containers are in your area? YES NO

Are they conveniently located? YES NO

What is the best part of the recycling program? (Continue on back, if needed)

_____

What is the worst part of the recycling program? _____

_____

What should be done to make the program better? _____

_____

How can you reduce waste in your area? _____

_____

Do you feel there is a need for hospital-wide recycling at WBAMC? YES NO

Are you willing to continue separating items for recycling? YES NO

* * * * * * * PLEASE CONTINUE ON THE BACK * * * * * * * *

Figure 2 (Continued)

PILOT PROGRAM RECYCLING SURVEY

Pilot Program Recycling Survey Quiz

Please circle the items that can be recycled in the WBAMC recycling program.

White computer paper
Junk mail
Copy Paper
Napkins, tissue paper
"Post-it" notes
Letterhead
Envelopes
Carbon paper
Typing paper
Forms
Computer paper with green lines
Self-stick labels
Federal registers
Notebook paper
Legal pad paper
Magazines/"slick" paper
Memo slips
Colored paper
Corrugated Cardboard Boxes
NCR (Carbonless paper)
Adding machine tape
Paper towels, wrappers, or cups
Wet cardboard or paper
Brown paper bags
Newspaper

True or False If the wrong items are placed in the recycling bins, an entire batch of recycling may have to be thrown away!

Other Comments:

_____

_____

Thank you for your support! Please return this survey to your area recycling coordinator or to CPT Sweet, Administrative Resident, Command Suite (2nd floor), (Distribution STOP 1; Phone - 4-2401).

Figure 3

Survey completed by area coordinators after pilot program completion

AREA COORDINATOR RECYCLING SURVEY

Thank you for your support during the pilot study! Please take a few minutes to provide feedback on how the program is going.

Name: _____ **Area:** _____

Are the majority of personnel in your area support the program?

YES NO

If no, why not? _____

_____

Do the majority of staff recycle the appropriate materials? YES NO

If no, why not? _____

Has the recycling program affected workflow and normal procedures in your area? YES NO

What recycling or educational techniques work best in your area?

_____

_____

What techniques did not work in your area? _____

_____

What are your plans for future recycling in your area? _____

_____

Other Comments (continue on the back): _____

_____

Thank you for your support! Please return this survey to CPT Sweet, Administrative Resident, Command Suite (2nd floor), (Distribution STOP 1; Phone - 4-2401).

Figure 4

HOSPITAL RECYCLING SURVEY - RESULTS

Ninety-five (95) surveys were returned. The results are indicated by the total percentage of responses to a particular question. I sent through Aa distribution (242 people) and received 95 back (39% response rate).

Do you recycle at home? YES 61% NO 39%

Do you feel there is a need for hospital-wide recycling at WBAMC? YES 97%, NO 2%, MAYBE 1%

If so, please circle the items you would like to see recycled?

All Paper: 85%; computer: 9.5%; white bond: 5%; colored: 2%

Plastic: 43%; Newspaper: 46%; Glass: 37%; Aluminum cans: 76%;

Cardboard: 58%; Metal cans: 33%

Other: Privacy Act paper, shredded paper, bottle caps, all types of metal (like screw bolts, old plumbing).

Would you support a recycling program at WBAMC? YES 98% NO 2%

Would you be willing to separate items to be recycled? YES 96%, NO 4%

A few commented that they would be willing to separate in their area if they were provided with appropriate containers.

In your work area, where is the most convenient location for recycling receptacles? There were various answers provided; some helped in the decision for placement of containers.

Would you be interested in hosting a pilot study in your work area?

Forty-seven percent of the respondents indicated that they would be interested in hosting a pilot recycling program in their area.

Figure 4 (Continued)

Do you have ideas for a WBAMC recycling slogan?

o Willful waste brings woeful want.
o Recycle today for a better environment.
o WBAMC Recycling — Save to conserve.
o That's cash — Don't trash; or Don't trash cash.
o Throw it back!
o Don't buy if it can't be recycled.
o Save your assets.
o WBAMC: Caring for people and their environment
o Recycling — Another way to show you care
o Nature gives willingly, so do we.

Other Comments:

o Money needs to be funneled to troop companies;
o Make sure there is a market for material. In many locations, there is too much newspaper, etc. to recycle;
o To make this project work, you must motivate the masses and show results of their efforts;
o I will support as long as funds earned are used for need at WBAMC;
o "We recycled all trash at our home for the city of El Paso until it was discontinued by the city because it was not cost effective. Considering the time involved by separating the items, it is not cost productive when you are paying salaries that are above the minimum wage level. Also, the work area becomes very cluttered up and unattractive when you have several different trash receptacles for different types of trash".
o This is long overdue!
o Should have been started long ago.
o The majority of our paper to be recycled is privacy act — can you make a provision for this?
o It's about time!
o Recycle funds back into clinic areas.
o Will there be a program to identify recyclable medical use items (like sterile water bottles)?
o This is a great idea —— about time! Would love to see this work out!

Figure 5 PILOT AREA PERSONNEL SURVEY - RESULTS

48 out of 114 surveys returned (42% return)

Who is your recycling coordinator? Correct: 71%; Incorrect/did not know: 29%
Did you receive enough information from your area coordinator about recycling? YES: 68% NO: 24% Blank: 8%
Do you know where the recycling containers are in your area? YES: 92% NO: 8%
Are they conveniently located? YES: 94% NO: 0% BLANK: 6%

What is the best part of the recycling program?

Conservation/decrease waste:	54%	Right thing to do:	2%
Make/Save money:	15%	Convenient location of bin:	2%
Decrease work area clutter:	2%		

What is the worst part of the recycling program?

Separating materials:	10%	Location of collection area (back dock):	2%
Too restrictive/ need to collect more:	10%	Lack of institutional cooperation:	2%
Non-cooperation by others:	6%	Potential loss of confidentiality:	2%
No hospital-wide pick-up:	6%	No money to departments:	2%
Pick up too infrequent:	4%	Containers too large:	2%

What should be done to make the program better?

Expand the program:	17%	Standardize paper use:	2%
Increase training/communication:	17%	More institutional support:	2%
Provide pick up throughout hospital:	8%	Change containers:	2%
Increase participation:	6%	Provide desk top containers:	2%
Make recycling mandatory:	4%		

How can you reduce waste in your area?

Increase awareness/conservation practices:	15%	Reuse back of paper:	4%
Recycle:	8%	Improve E-mail usage:	2%
Consolidate data on printers:	6%	Change purchasing practices:	2%

Do you feel there is a need for hospital-wide recycling at WBAMC? YES: 90% NO: 2% BLANK: 8%
Are you willing to continue separating items for recycling? YES: 94% BLANK: 6%

AVERAGE SCORE PILOT PROGRAM RECYCLING SURVEY QUIZ: 67.4%

Figure 6

AREA COORDINATOR SURVEY - RESULTS

This is a consolidation of comments from area coordinators.

Were the majority of personnel in your area supportive of the recycling program?

YES 6 NO 0

Do the majority of staff recycle the appropriate materials? YES 6
NO 0

But they don't get a choice because of the products we use; it took a little while for people to become accustomed to the program.

Has the recycling program affected workflow and normal procedures in your area? YES 0 NO 6

What recycling or educational techniques worked best in your area?

One-to-one instruction or inservice; putting up signs (visible) indicating common mistakes; 15 minute inservice on our plan (for recycling); I used a memorandum and talked to people directly; knowledge of program; placement of recycling bins around areas of highest use.

What techniques did not work in your area?

Information flyers; word of mouth; leaving it, initially, up to common sense; I feel that a class should be given by the recycling personnel to each pilot study because some of my personnel are literally lost in what you can and cannot recycle; all that have been tried have worked.

What are your plans for future recycling in your area? Continue inservices and perhaps a film of some sort; continue to learn from our mistakes/periodic reminders; primarily to continue and to train my replacement; our clinic has been given the go to start an aluminum recycling bin; make the recycling use more on a section basis.

Other Comments: I feel that once the program goes hospital-wide, it will be necessary to have bi-annual training on the recycling program just like we do for fire and safety. Making it mandatory training will ensure that due to personnel turn-over no one will be missed. I would periodically check the containers to make sure the correct paper was being placed in the right bins.

Figure 7

DUTY DESCRIPTION: AREA RECYCLING COORDINATOR

1. **Implementation of recycling within the area**

   * Education

     o attend class on recycling at recycling center
     o educate area staff on:

       - container location and appropriate materials for recycling
       - reason to recycle
       - provide feedback to staff on area programs

   * Develop program based on constraints within the area

     o determine appropriate location for receptacles within his/her area;
     o provide "desk-side" receptacles (e.g., cardboard boxes) for collection of recyclable materials

2. **Monitor and evaluate recycling program within area**

     o identify problems
     o identify successes

3. **Act as a liaison between area staff and WRAMC Recycling Coordinator**

     o act as the primary point-of-contact (POC) for staff questions and ideas about recycling;
     o provide feedback on performance of recycling collectors, the recycling program, staff attitude/morale, and other pertinent information;
     o make recommendations for improvement

Figure 8

DUTY DESCRIPTION WBAMC HOSPITAL RECYCLING COORDINATOR

1. **Conduct recycling committee meetings**

   - o provide an agenda to members
   - o notify members meetings at least one week prior, if possible
   - o conduct meetings

2. **Instruct all area/floor coordinators on the program**

3. **Act as the liaison between area/floor coordinators and the command**

   - o act in an advisory capacity to floor coordinators
   - o brief the command on problems, successes, and status of the program

4. **Coordinate program with the Ft. Bliss Recycling Center**

Figure 9

PILOT POLICY: RECYCLING PROGRAM

1. The following areas will be conducting pilot studies for the WBAMC Recycling Program starting 17 February 1993:

* Ward 9W
* ICUs
* Dental Clinic
* Nutrition Care
* Pediatric Clinic
* Information Management
* C Company
* Command Suite
* Pharmacy
* Medical Library

The pilot study areas will only collect paper (white bond, white bond to be shredded, and mixed paper) and corrugated cardboard; they will run for a minimum of 30 days.

2. Each area will have a recycling coordinator who will be responsible for implementing the program and educating the staff within their area on the details of the program. The area coordinator will monitor the progress of the program and provide feedback to the WBAMC recycling coordinators (CPT Sweet ph. 4-2401 or LTC Kohler ph. 4-2450). The WBAMC recycling coordinators will be responsible to provide training to area coordinators prior to the pilot program.

3. Each area will have three to four flame-retardant recycling receptacles with lids clearly marked with the items to be recycled. The area coordinator will be responsible to ensure that the staff uses the receptacles appropriately. All cardboard will be broken down and placed in, or neatly by, the receptacles.

4. Lessons learned from the pilot study will be used to develop a formal hospital-wide recycling program.

Figure 10

SAFETY POLICY: WBAMC RECYCLING PROGRAM

1. Recycling containers will be kept covered at all times.
2. Recycling containers will not be used to dispose of infectious or hazardous wastes and associated materials.
3. Recycling containers must be kept in an area that can be sealed off by solid core wood doors or fire-rated door assemblies.
4. Recycling containers will not be kept in hallways.
5. Recycling containers will not be kept in occupied patient rooms.
6. Questions should be directed to the WBAMC Safety Officer at 569-2184.

Sources: Lathrop, 1991; WBAMC Regulation No. 385-1, 1991.

Figure 11

CHIEF OF STAFF MEMORANDUM

HSHM-MZC 22 February 1993

MEMORANDUM FOR WBAMC Personnel

SUBJECT: Recycling

1. There are eight areas within the hospital participating in the pilot recycling program which began on 17 February 1993. They are collecting in separate containers white paper, white paper (FOUO/sensitive only), colored paper, and corrugated cardboard.

2. White paper containing sensitive information may be either placed in the FOUO container for shredding at the recycling center, or torn in half or quarters (i.e., through the social security number), and placed in the regular white paper container.

3. The following is a list of what can and cannot be recycled for the pilot recycling program:

YES	NO
White computer paper	Carbon paper
Copy Paper	Envelopes
Letterhead	Magazines/"slick" paper
Typing paper	Junk mail
Forms	"Post-it" notes
Notebook paper	Self-stick labels
Legal pad paper	Federal registers
Memo slips	Napkins, tissue paper
Colored paper	Paper towels, wrappers, cups
	Wet cardboard or paper
	Computer paper - green lines
	NCR (Carbonless paper)
	Adding machine tape
	Brown paper bags
	Newspaper

Figure 11 (continued)

4. It is very important that only appropriate items be placed in the recycling bins. If not, an entire batch of recycling may be rejected by the buyers at the expense of the Ft. Bliss Recycling Center.

5. A hospital-wide recycling program will be started using the lessons learned from the pilot studies. Thank you for your support! It is important to get this information out to all staff. If you have any questions or suggestions, please call CPT Sweet at 4-2401.

WILLIAM J. SHAFFER
COL, MS
Chief of Staff

DISTRIBUTION:
Aa

Figure 12

RECYCLING

White computer paper
Copy Paper
Letterhead
Typing paper
Forms
Notebook paper
Legal pad paper
Memo slips
Colored paper
Corrugated Cardboard Boxes

Carbon paper
Envelopes
NCR (Carbonless paper)
Magazines/"slick" paper
Adding machine tape
Junk mail
"Post-it" notes
Self-stick labels
Federal registers
Napkins, tissue paper
Paper towels, wrappers, or cups
Wet cardboard or paper
Computer paper with green lines
Brown paper bags
Newspaper

NOTE: If the wrong items are placed in the recycling bins, an entire batch of recycling may have to be thrown away!

Thank you for your support!

Figure 13

MEMORANDUM FOR RECYCLING CLASS

MEMORANDUM TO Recycling Committee Members and Coordinators 20 Jan 93

1. The Ft. Bliss Recycling Center will be conducting a training class and tour of the center on 26 January 1993 from 1300 to 1500 in Bldg. 1177. (See map below).

2. It is very important that you receive training prior to the start of the pilot study. If you cannot attend this meeting, we will set up another time. Please RSVP as soon as possible.

3. Thank you for your support! To RSVP or if you have any questions, please call me at 4-2401.

Laurie E. Sweet

LAURIE E. SWEET
CPT, SP
Administrative Resident

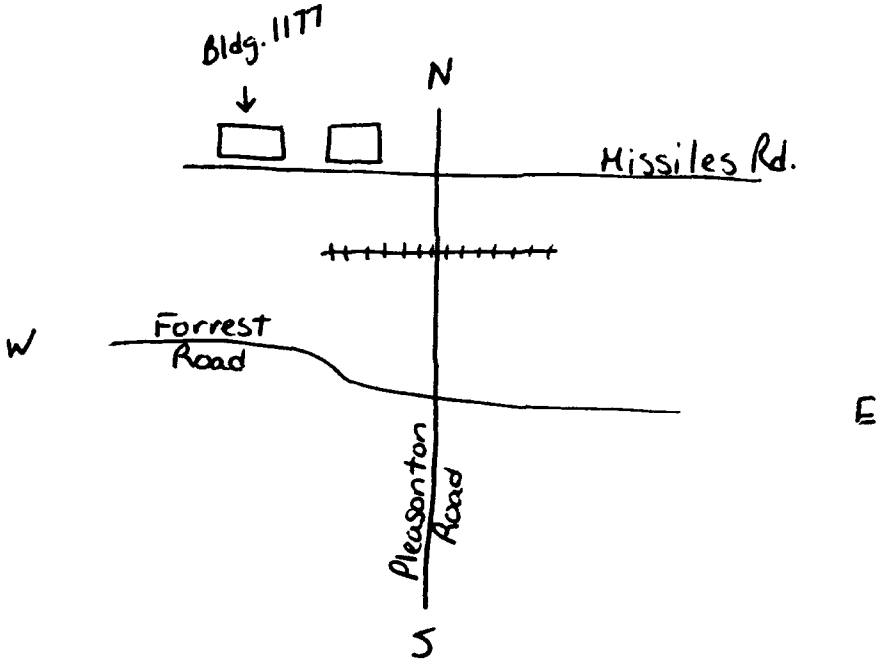

Figure 14 EDUCATIONAL ARTICLE AND FLYER

WHY RECYCLE?

It's the law.

In 1991, President Bush signed an executive order requiring all DoD installations to have cost-effective resource recovery and recycling programs.

We're running out of landfill space.

In 1978, there were 20,000 landfills in the U.S. By 1988, that number was down to 6,000. Oh sure, we can make more landfills, but "not in my backyard!!!!" And, besides, many landfills can cause serious surface and ground water pollution.

Incineration pollutes.

Incinerators can reduce the volume of waste by 90%. And, while they can be constructed to be environmentally safe and harness energy to generate electricity and refuse-derived fuels, they are very expensive and may still cause air pollution from emissions and water pollution from ash dumped in landfills.

It's something we can do to protect the environment.

- o it decreases the amount of solid waste that must be disposed of through incineration and/or landfills;
- o it reduces energy, water, and raw material requirements;
- o it reduces air and water pollution.

DID YOU KNOW?

o Recycling 1 ton of paper will save 17 trees, 96 gallons of water from the pulping process, and 2.5 barrels of oil worth of energy.

(80 boxes of HIS paper = 1 ton)

o Using scrap aluminum reduces energy use and air pollution by as much as 95%. In fact, when you throw away an aluminum can, you waste the same amount of energy as a half can of gasoline.

Figure 15

RECYCLING NEWS

April is National Recycling Month; April 22 is Earth Day. What a great time to start a home recycling program! Here's how:

o Use separate containers for each item. Store containers somewhere out of the way (i.e., in the garage). Keep one container or bag in the house to collect recyclables. When it's full, separate items into the storage containers. If you're really cramped for space recycle only one or two items.

o Containers should be easily replaceable or washable, such as cardboard boxes, plastic laundry baskets, or empty milk crates. And, be sure they fit in your car!

o Keep it simple. Start with one or two items, get the system down, then expand. Take recycling with you when you go to the PX or commissary. Empty the containers into the recycling bins behind the commissary, then do your shopping. No need for an extra trip.

o Get the whole family involved. Let the kids decorate boxes used for storage bins. Make recycling part of the family routine.

Here's a list of what can be dropped off at the recycling bins behind the commissary and on Biggs Airfield. If you would like more information, or would like to be paid for recycling, please call 568-8093 or 568-3779. Or, call another local recycling center.

o **Plastic:** All types of plastics are accepted. Remove caps, rinse, and step on containers to reduce size.

Fact: American use 2.5 million plastic bottles every hour. If the pilgrims had six packs, the rings would still be around today.

** OVER **

Figure 15 (cont'd)

o **Glass:** Remove caps and rinse containers. Separate by color (brown, green, clear). Types of glass not accepted include: mirrors, ceramic cups and plates, light bulbs, window glass, and drinking glasses.

Fact: The energy saved from recycling a glass bottle will light a 100 watt bulb for 4 hours. Glass made from recycled glass reduces the production of air pollution by 20% and water pollution by 50%.

o **Newspaper:** Newsprint only; remove all circulars and glossy paper.

Fact: The largest component of trash in landfills is newspapers (14% by volume).

o **Aluminum:** Cans only. Rinse.

Fact: Producing aluminum cans from ore (bauxite) takes 20 times as much energy and produces 20 times as much pollution as the process to recycle aluminum. And, don't forget bauxite is strip mined.

o **Steel (tin) cans:** These are cans containing vegetables, coffee, soup, etc. (Hint: you know it's steel if the refrigerator magnet sticks). Rinse and flatten to conserve space.

Fact: Every ton of steel recycled saves 2,500 pounds of iron ore, 1,000 pounds of coal, and 40 pounds of limestone.

o **Corrugated Cardboard:** This is the kind with inner fluting and one or two outer layers. Clean brown paper bags may also be recycled with cardboard. Wax or plastic coated cardboard and paperboard (e.g., cereal boxes) cannot be recycled.

Fact: Americans use enough cardboard each year to make a bale as big as a football field and as tall as the World Trade Center. Cardboard manufacturing produces sulphur dioxide (gas which cause acid rain). By recycling cardboard, sulphur dioxide pollution is cut in half.

Once you get a system down, home recycling takes only a little time and it's something you and your family can do for the environment.

Sources: The Fort Bliss Recycling Manual
The Recycler's Handbook, 1990

Figure 16

WBAMC HEALTH CARE HIGHLIGHTS

FIRST TO CARE! Volume I, Number 4 April, 1993

Gus Munoz Wins Premier Nutrition Run

Gus Munoz, an unaffiliated entrant, turned a blazing time of 31 minutes 37 seconds to capture first place honors in the first annual Nutrition Month Fun Run held Saturday at McKelligon Canyon .

Munoz, running in the 19-and-under age category, finished 16 seconds ahead of the second place overall runner, Tim Carlson, who was the winner in the 30-39 age group.

Fastest female for the five-mile event, which paced the runners up and down the steep drive through McKelligon Canyon, was Annette Duckworth, who completed the trip in 40:19.

The run/walk was sponsored by the Nutrition Care Division and B Company at William Beaumont Army Medical Center as a fund raiser for the Morale Welfare and Recreation fund at Fort Bliss, and some 284 entries turned out in near-perfect weather to test their skill and endurance.

Lt. Col. Kathleen Waddell, Chief of Nutrition Care at WBAMC, said she was very pleased at the number of entries for the first-time-ever event, and expressed her gratitude to "both the military and civilian communities for their support of the run/walk."

Trophies were presented to the top three finishers in each age category in the run, and all walkers received ribbons for their participation.

The trophy winners were:

Male, 19 and under: Gus Munoz, Donald Smith, and Shannon Brown.

Male, 20-29: Luis Tamez, Adnan Mareno, and Luis Rivera.

Male, 30-39: Tim Carlson, Tim Flynn, and George Zamudio.

Male, 40-49: Michael Messinger, Johnnie King, and Paul Resignato.

Male, 50-59: William Barry, Gerald Alexander, and Wayne Duncan.

Male, 60-69: Oakland Demoss, Donald Navrkal, and Benton Smith.

Female, 19-under: Magdalena Lara, and Alejandra Rayas.

Female, 20-29: Annette Duckworth, Donna Tillman, and Mary Lee Ellis.

Female, 30-39: Angie Wilson, Barbara Fox, and Johanna Kirby.

Female, 40-49: Dixie Collins, Ruth Garza, and Linda Chew.

Female, 50-59: Trini Rabe.

NUTRITION CARE DIVISION DRAWS LARGE FIELD FOR RUN/WALK--A large field of runners starts up the steep hills of McKelligon Canyon in the William Beaumont Army Medical Center Nutrition Care Department's first run/walk. In all, 284 athletes competed in the event.

Recycling Program Produces Results

By Capt. Laurie E. Sweet, SP

Starting 17 February 1993, the following areas started pilot recycling programs: Wards 9W, 10W, CCU, the Dental Clinic, Nutrition Care Division, Information Management, the Pediatric Clinic, the Command Suite, the Medical Library, and the Pharmacy.

Recycling one ton of paper saves 17 trees, 96 gallons of water from the pulping process, and the energy equivalent to 2.5 barrels of oil. So far, the pilot areas have collected and recycled 1209 pounds of paper. That's and 1.5 barrels of oil! Plus, we've recycled a large volume of cardboard.

Recycling will continue in these areas and others will be added gradually. For more information on how you can start a recycling program in your area, please call CPT Sweet at 4-2401.

Don't forget the recycling bins on Biggs Airfield and behind the commissary to recycle glass, plastic, aluminum, tin cans, cardboard, and newsprint from home. Or you can take these items to the Biggs Recycling Center. Please call 568-8093 for

Figure 17

HOSPITAL POLICY: RECYCLING PROGRAM

1. WBAMC staff will continue to collect white paper (sensitive for shredding and non-sensitive) and corrugated cardboard. (Please see the attached for a description of what is acceptable for recycling).

2. Each area will have a recycling coordinator who will be responsible for implementing the program and educating the staff within their area on the details of the program. The area coordinator will monitor the progress of the program and provide feedback to the WBAMC recycling coordinators (CPT Sweet ph. 4-2401 or the XO ph. 4-2450). A videotape and pamphlets on recycling are available through the Executive Office in the Command Suite (2nd floor).

3. Each area may sign out recycling receptacles with lids from the property management warehouse. The area coordinator will be responsible to ensure that staff members use the receptacles appropriately. All cardboard will be broken down and placed in, or neatly by, the receptacles, or taken to the large cardboard boxes on the loading dock. Pick up will occur on a weekly basis.

4. Earnings from the recycling program will be used for appropriate hospital activities.

Encl: Safety Policy
Flyers - Why Recycle?
- Appropriate materials for recycling

Figure 18

EDUCATIONAL FLYER FOR HOSPITAL-WIDE RECYCLING PROGRAM

R E C Y C L I N G

White computer paper
Copy Paper
Letterhead
Typing paper
Forms (White/no carbon)
White notebook paper
Corrugated Cardboard Boxes

Yellow legal pad paper
Memos
Carbon paper
Envelopes
NCR (Carbonless paper)
Magazines/"slick" paper
Adding machine tape
Junk mail
"Post-it" notes
Self-stick labels
Federal registers
Napkins, tissue paper
Paper towels, wrappers, or cups
Wet cardboard or paper
Computer paper with green lines
Brown paper bags
Newspaper

NOTE: If the wrong items are placed in the recycling bins, an entire batch of recycling may have to be thrown away!

Thank you for your support!

Figure 19

STATEMENT OF WORK FOR RECYCLING AGREEMENT

DEFINE THE TASK: Collect and segregate all types of recyclable materials and deliver them to points of sale.

STATEMENT OF WORK:

Summary of jobs: 1) Collect recyclable materials from areas throughout the hospital and deliver to points-of-sale; 2) maintain records of volume and money received for each category of recycling; 3) ensure that sensitive materials are shredded by the recycling centers; and 4) maintain clean recycling barrels and carts.

On a scheduled or as needed basis, contractors will pick up recyclable materials from recycling containers throughout the hospital, and transport them to recycling centers. All hospital recycling containers will be covered and returned to their original location after materials are removed. Barrels and carts used for recycling will be cleaned by the contractors as needed at the WBAMC loading dock.

The collection areas will include hospital wards, clinics, and offices. Contractors will not be required to handle medical waste, nor will they come in close contact with hospital patients. Contractors must ensure that paper from containers marked privacy

Figure 19 (Continued)

act, sensitive, or paper for shredding is shredded by the recycling center.

Contractors' point-of-contact within the hospital will be the executive officer or his/her appointee. The contractors will maintain records of recyclable materials collected from the hospital and delivered to recycling centers. The contractors will provide documentation of deliveries to the executive officer and will pay thirty percent (30%) of profits to a designated WBAMC fund.

WBAMC will provide recycling receptacles for the hospital recycling centers and will also provide wheeled containers to be used by the contractors for pick up. Contractors will sign a hand receipt, and will be responsible for the security and maintenance of wheeled containers. WBAMC will not be responsible for injuries incurred by the contractors while performing duties either within the hospital, or while enroute to or from delivery sites. Except as specifically stated above, the contractors will provide all personal supplies and equipment to complete these tasks.

This agreement may be terminated at anytime by either party.

Figure 20

COMMANDER'S LETTER FOR HOSPITAL-WIDE RECYCLING PROGRAM

FROM Commander, William Beaumont Army Medical Center

TO WBAMC Staff

SUBJECT: WBAMC Hospital-wide Recycling Program

1. Recycling decreases the volume of waste sent to landfills, reduces air and water pollution, reduces waste disposal costs, and saves energy and natural resources. Recycling is mandatory for Department of Defense Installations.

2. From 17 February to 31 March, ten activities in WBAMC conducted a pilot recycling study; they saved 71.7 trees through paper and cardboard recycling alone (For every ton of paper recycled, an average of 17 trees are saved from being cut down). We are now expanding the paper and cardboard recycling program throughout the hospital.

3. Each section/activity will have a designated area coordinator or point of contact to coordinate the program in his/her area. That person will be responsible to inform staff members about the program and ensure recycling area maintenance.

4. Two individuals will be collecting materials from recycling containers throughout the hospital on a weekly basis.

5. The Hospital Executive Officer will manage the program; money generated through recycling will be placed in unit funds and may be used for appropriate hospital activities.

6. POC is CPT Sweet (4-2401).

7. Let's do our part for the environment.

James J. James
Brigadier General, Medical Corps
Commanding

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DEFINITIONS

Recyclable Materials: Those materials that are accepted for recycling at the Fort Bliss recycling center.

Tipping Fees: The charge for collection and landfill disposal per pound of non-medical waste.

Appendix 1